




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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,055	11/14/2001	Bruce F. Macbeth	905_132NP	4851
20874	7590	07/15/2004	EXAMINER	
WALL MARJAMA & BILINSKI 101 SOUTH SALINA STREET SUITE 400 SYRACUSE, NY 13202			TERESINSKI, JOHN	
			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>09/992,055</p>	<p>Applicant(s)</p> <p>MACBETH ET AL.</p>	
	<p>Examiner</p> <p>John Teresinski</p>	<p>Art Unit</p> <p>2858</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 11-14, 24, 25, 31-38, 41-43 and 45 is/are rejected.
- 7) ☒ Claim(s) 4-10, 15-23, 26-30, 39, 40, 44 and 46-55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 4-10 are objected to because of the following informalities: claims 4,5 and 7 recite “said steps in load current,” claim 6 recites “said steps in line voltage” and claim 8 recites “said out of phase steps” which are all lacking antecedent basis. Claims 9-10 are dependent on claim 8. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,324,098 to Heller.

Regarding claim 1, Heller disclose an upstream/downstream discriminator circuit (column 3 lines 62-67), wherein said discriminator circuit detects current fluctuations in at least one current characteristic of a load current and voltage fluctuations in at least one voltage characteristic of a line voltage (column 3 lines 62-65), said discriminator circuit detecting an upstream transient event when said current fluctuations and said voltage fluctuations are in phase/a phase concordance, and said discriminator circuit detecting a downstream transient event when said current fluctuations and said voltage fluctuations are out of phase/ not in phase concordance (column 4 lines 9-13).

Claims 11-13, 24, 25, 31,32, 34-37, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,796,259 to Dickmander.

Regarding claims 41 and 42, Dickmander discloses a method and device including means for detecting current fluctuations in at least one current characteristic of a load current (column 2 lines 60-67), means for detecting voltage fluctuations in at least one voltage characteristic of a line voltage (column 2 lines 60-67) and means for comparing the polarities of said voltage fluctuations and said current fluctuations, wherein said comparison indicates whether an arc fault or arc mimicking noise is located in said branch circuit portion or located in a remainder of said electrical distribution system based on the comparison of the polarities (column 3 lines 5-15).

Regarding claim 11, Dickmander discloses a first sensor/sampler for measuring current (column 6 lines 5-6), and a second sensor/sampler for detecting voltage fluctuations (column 6 lines 3-4).

Regarding claims 12 and 37, Dickmander discloses an interrupting mechanism responsive to a signal from the discriminator, wherein the interrupting mechanism does not disconnect the load from the electrical distribution system when the arc fault is located in the remainder of the electrical distribution system (column 2 lines 60-67).

Regarding claim 13, Dickmander discloses arc faults occurring in the protected branch portion produce contrary step directions with respect to faults occurring in the remainder of the electrical distribution system (column 3 lines 16-24).

Regarding claim 24, Dickmander discloses a microprocessor/controller (22).

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Regarding claim 25, Dickmander discloses first and second hold circuits, wherein said current fluctuation signal and voltage fluctuation signal are held for pre-determined times/1 cycle in said first and second hold circuits, respectively, to allot said microprocessor sufficient time to recognize said fluctuations (column 2 lines 5-25).

Regarding claims 31,32 and 34-36, Dickmander discloses an impedance/resistive impedance inserted in series with the line (12) in a separate housing as device (12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heller in view of U.S. Patent No. 5,439,509 to Blades.

Regarding claims 2 and 3, Heller does not disclose transient events producing a high frequency spectrum or low frequency spectrum. Blades discloses a method and apparatus for detecting arcing in power systems exhibiting high frequency spectrum (column 21 lines 18-42) and low frequency spectrum (column 11 lines 33-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the high pass filter and microprocessor as taught by Blades into Heller for the purpose of providing a convenient means of acquiring high frequency noise (column 21 lines 18-42).

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Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmander in view of U.S. Patent No. U.S. Patent No. 5,572,138 to Nimmersj"o.

Regarding claim 14, Dickmander. does not disclose differentiating sensors. Nimmersj"o discloses a method for determining the direction of a fault including differentiating sensors (column 3 lines 31-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include differentiating sensors as taught by Nimmersj"o into Dickmander for the purpose of accurately determining the location of a fault.

Claims 33, 38, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickmander in view of U.S. Patent No. 5,439,509 to Blades.

Regarding claims 33, 43 and 45, Dickmander does not disclose a transient events producing a high frequency spectrum or a high pass filter. Blades discloses a method and apparatus for detecting arcing in power systems and that it is well known to utilize a high pass filters detect steps in line voltage (column 21 lines 18-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the high pass filter and microprocessor as taught by Blades into Russell et al. for the purpose of providing a convenient means of acquiring high frequency noise (column 21 lines 18-42).

Regarding claim 38, Dickmander does not disclose current and voltage fluctuations exclusively associated with arc extinguishing or that occur during each half cycle. Blades discloses that it is well known for current and voltage fluctuations to be exclusively associated with arc extinguishing and fluctuations that occur during each half cycle (column 4 lines 44-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made

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to include the limitations as taught by Blades into Dickmader for the purpose of accurately detection arc faults based on arc characteristics.

Allowable Subject Matter

Claims 15-23, 26-30, 39, 40, 44 and 46-55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Regarding claims 15:

The primary reason for indicating allowable subject matter of claim 14 is the inclusion of di/dt sensor converts steps into di/dt pulses, dv/dt sensor converts steps into dv/dt pulses and identification of the direction from polarities of leading edges of the pulses. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claims 16-23 are indicated allowable due to their dependency on claim 15.

Regarding claims 26 and 39:

The primary reason for indicating allowable subject matter of claims 26 and 39 is the inclusion of a load current zero cross detector. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 27 is indicated allowable due to dependency on claim 26.

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Claim 40 is indicated allowable due to dependency on claim 39.

Regarding claim 28:

The primary reason for indicating allowable subject matter of claim 28 is the inclusion of discriminator receives signal from an analog to digital converter. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claims 29 and 30 are indicated allowable due to dependency on claim 28.

Regarding claim 44:

The primary reason for indicating allowable subject matter of claim 44 is the inclusion of a range of harmonics from its fundamental frequency to its 10th harmonic. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Regarding claims 46:

The primary reason for indicating allowable subject matter of claim 46 is the inclusion of comparing the polarities of the voltage fluctuations and the current fluctuations wherein the comparison indicates whether an arc fault or arc mimicking noise is located in the branch circuit portion or located in a remainder of said electrical distribution system based on the comparison of the polarities. It is these features found in the claim, as they are claimed in the combination

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that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claims 47-55 are indicated allowable due to their dependency on claim 46.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments with respect to claims 1-55 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Teresinski whose telephone number is (571) 272-2235. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

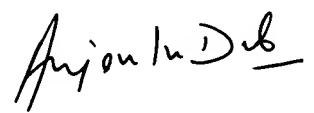
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ST

JT

July 12, 2004


ANJAN DEB
PRIMARY EXAMINER